



# The Engineering Integrity Society

## 4th Durability & Fatigue Advances in Wind, Wave and Tidal Energy

BAWA, Filton  
28 January 2016



Building on events in 2006, 2008 and 2010, this 4th EIS meeting aims to highlight recent advances in fatigue and durability assessment for renewable energy structures. The relevance of these events relates to the continual increase of energy supply from renewable sources in the UK, Europe and worldwide. On 17th August 2014 a record high of 22% of the UK's electricity supply was generated by wind. In other EU countries the record is approximately double that. Building on this demand the size of the individual offshore prototype production machines is now exceeding the 10MW rated energy. Almost at the same time, secured funding for the 6MW first phase of the world's largest commercial tidal energy production in the north of Scotland was announced.

These new challenges require enhanced design for integrity and reliability that is based on established and new practices. The 4th EIS WWT conference aims to provide a platform for the discussion of current technological developments in this area. The event speakers are drawn from companies in this sector, as well as from experienced professionals and academic researchers working with emerging technologies in theoretical assessment of renewable structures.



**Programme**

|         |  |
|---------|--|
| 9.00am  | Registration, Tea and Coffee   |
| 9.20am  | Introduction   |
| 9.30am  | Dual-Axis Fatigue Testing of Large Wind Turbine Blades<br>Peter Greaves, Offshore Renewable Energy Catapult  |
| 10.00am | Advances in Component Reliability Testing for Offshore Renewable Energy<br>Dr Philipp Thies, University of Exeter  |
| 10.30am | Remote Monitoring of In-service Bolt Tension<br>Prof Jarek Rosinski, Transmission Dynamics   |
| 11.00am | Tea and Coffee   |
| 11.30am | The Use of Fibre-optic Sensors for In-service Structural Monitoring of Tidal Energy Turbines<br>Robert Knapp, Epsilon Optics Ltd                           |
| 12.00pm | Fatigue Modelling of Large Composite Wind Turbine Blades<br>Oscar Castro, Department of Wind Energy, Technical University of Denmark                       |
| 12.30pm | Lunch and Exhibition   |
| 1.30pm  | Gearbox Life in Wind and Tidal Turbines: Solutions and Novel Monitoring Techniques<br>Prof Jonathan Wheals, Ricardo  |
| 2.00pm  | The role of Structural Redundancy for planning Offshore and Marine Renewable Energy Inspection Strategies<br>Prof Feargal Brennan, University of Cranfield |
| 2.30pm  | Risk Based Approach to Demonstration of a Novel Wave Energy Convertor<br>Charles Taylor, Quoceant  |
| 3.00pm  | Tea and Coffee   |
| 3.30pm  | Tidal Foundation Selection<br>Rory Sinclair, Ramboll   |
| 4.00pm  | A Design for Reliability Methodology for Tidal Turbine Devices<br>Roy Browett, Ricardo UK Ltd/Offshore Renewable Energy Catapult                           |
| 4.30pm  | Offshore Wind Structures - Gambling With Grout: Worth the Risk?<br>Dr Chris Golightly, Geotechnical and Engineering Geology Consultant                     |
| 5 pm    | Closing Comments   |

**Booking Form**

|  |              |                   |
|--|--------------|-------------------|
|  | EIS Member   | Non EIS Member    |
| Delegate   | £100+VAT     | £125+VAT          |
| Student/<br>Apprentice   | £25+VAT      |                   |
|  | UK           | Rest of the World |
| Personal<br>Membership of<br>the EIS   | £25 per year | £30 per year      |
| I enclose a cheque for £_____ made payable to the Engineering Integrity Society. Payment can also be made by BACS. |              |                   |
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| Any Special<br>Dietary<br>Requirements   |              |                   |

Please return completed forms to [info@e-i-s.org.uk](mailto:info@e-i-s.org.uk) or send to the following address:  
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The Engineering Integrity Society is an independent not-for-profit organisation which aims to inspire all engineers, both experienced and newly qualified, across a broad spectrum of technologies. The Society is committed to promoting events and publications, providing a forum for engineers to discuss present industrial needs, new technologies and to stimulate both company and personal development.

The annual subscription rates are £25 for UK residents and £30 for non-UK residents. Upon joining the Society you will also have the additional advantages of preferential attendance rates at EIS events, together with selected events held by some of the associated organisations. In addition you will have access to CDs containing archived copies of EIS presentations.

The **ENGINEERING INTEGRITY SOCIETY** is pleased to acknowledge the support of the following organisations:

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